# Proteus Insights and the Protean Media Critical Thinking Game

## *"Examining Future Complexity"*

### *By Mr. Bill Wimbish[1]*

## Future National Security Challenges

As our Nation continues to deal with the aftermath of 9/11, the Global War on Terrorism (GWOT), and subsequent supporting operations in Afghanistan and Iraq, it has become harshly apparent that we have entered a new age of complexity. Leaders are going back to the drawing board to rethink how we deal and cope with future challenges spawned by the age of knowledge. Technology has enabled our foes to adapt and attack the fabric of our fundamental values, beliefs and foundations which have made our nation the global power it is today. These new-age threats have and will continue to be aimed at our vulnerabilities and seams. Using idiosyncratic methods and asymmetric techniques, super empowered groups and individuals are able to hide, adapt, and strike quickly, with precision.

The question for the future is: have we learned to cope with uncertainty, ambiguity and complexity? In order to holistically analyze our vulnerabilities and identify these threats, we must determine systemic root causes of national security issues, applying solutions and developing strategies that can withstand the long term rigors of a complex interconnected world. We must understand "what it is we want to do and what we do not want to have happen." But if we can't repeat patterns, and if outcomes based on constant inputs are not constant, then how can we anticipate or predict what is on the future horizon?

Today the most elusive and complex phenomena is human thought, behavior and interactive social networks within the cognitive domain.[2] We often perceive cognitive thought and resultant human actions to be irrational or illogical. However, what may seem irrational to us may be rational within a different context—a context based on different life experiences, social, cultural and religion norms or ideologies. Can we solve complex future issues based on a constantly spinning Meta rubrics cube of discrete events, related or unrelated actions, and direct or indirect and constantly changing and morphing relationships among human actors across the different domains? The answer is a qualified yes.

## Proteus Insights

The qualified yes can only be accomplished if future leaders, decision-makers and analysts within the Joint, Interagency, Intergovernmental, and Multinational (JIIM) communities are taught "how" to think about future complexity versus "what" to think. Understanding that there are and will be discrete actors, hidden patterns and complex relationships within and among domains, the coin of the future realm will be the ability to bound, frame and solve problem sets holistically using a set of insights that identify the key characteristics of the environment, complex attributes and actions of actors.

The ten Proteus Insights (PI)[3] developed from the 1999-2000 futures study sponsored by the National Reconnaissance Office (NRO) provide such a bounding framework. The PIs are more than just catch phrases or buzz words. They provide a doctrinal outline on "how" to think holistically about the future geo-strategic environment, its actors,

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[1] Mr. Wimbish is the Proteus Project Manager and a senior analyst for Booz Allen Hamilton, Inc.
[2] These domains are characterized as Physical, Informational Cognitive and Social. See Alberts, Garstka, Hayes and Signori, *Understanding Information Age Warfare,* (CCRP Publication Series, August 2001), 10-29.
[3] Krause, Loescher, Schroeder and Thomas, 15-84. Originally there were nine insights. The tenth insight, Threats and Opportunities, was added by the Proteus consortium subsequent to 9/11 and in the advent of the Global War on Terrorism and operations in Afghanistan and Iraq. It was not part of the original Publication See "Proteus History" briefing at: http://www.strategicleader.us/Proteus/pgm_history.htm

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**Ten Insights**

- **Starlight**: Foresight and Uncertainty Management
- **Sanctuary**: They Can Run and They Can Hide
- **Sweat the Small Stuff**: Cyber Beings, Biotech, Nanotech
- **Veracity**: The Challenge of Truth and Knowledge
- **Power**: The Shadows in Plato's Cave ( often from Wealth)
- **Wealth**: It's Not Just Money (influences Power)
- **Herds**: People and Ideas on the Move
- **A Parallel Universe**: From Networks to Cyber Life
- **Bedfellows**: The Significance of Teaming (diversity matters)
- **Threat and Opportunity**   Clearly see both sides

Figure 1: Ten Insights

relationships and patterns (Figure 1). The five Proteus "planes of influence"[4] which closely mirror the information age warfare domains, add additional resolution, but at the same time show the complexity of multiple planes where actors are influenced or where they influence others (Figure 2). These ten "Insights" point toward a new way of considering actions or unintentional consequences of strategic decisions; either commercial, diplomatic or military. These insights can be used as a set of lenses to view future issues through a different mindset, to consider issues through a different value set, and to think creatively, not traditionally. The PIs are applicable at all levels whether developing national security policy, conducting strategic intelligence or developing military theater security assistance or campaign plans at the operational level using all elements of national power: Diplomatic, Informational, Military and Economic (DIME).

## Future Complexity: Modeling Simulation and Gaming

U.S. Government agencies and the Department of Defense (DoD) have launched numerous initiatives to develop scenarios, models, simulations, and games to educate and assist strategic and operational intelligence analysts and decision-makers in dealing with future asymmetric and idiosyncratic complexity, especially as it relates to technology, social values, cultural norms, beliefs and human behavior. The genesis of these new efforts comes from a series of military and diplomatic lessons learned from ongoing stability and reconstruction (nation building) operations in Southwest Asia and the GWOT. The challenge for today and tomorrow is how best to model or game complexity in human thought and action. How do we measure effects or predict future actions of friend and foe or determine



**Planes of Influence**

"Places" where friendly, hostile or neutral actors seek to influence others.

- **Terrestrial**: The Classic military and geopolitical domains of land air sea as well as the physical concentrations of wealth (i.e., sea lanes, oil fields)
- **Space**: The domain of satellites and future space platforms
- **Spectral**: The electromagnetic spectrum where EW, bandwidth, frequency management and sensing occur
- **Virtual**: The global world of networks and connectivity
- **Psychological**: The Media and info conduits used to influence the hearts and minds of people

Figure 2: Planes of Influence

what effect our actions will have on a group, sect, culture or nation? Are there unintended consequences or second and third order effects that are not anticipated?

The National Intelligence Community (IC), the U.S. State Department, the DoD, U.S. Joint Forces Command, the U.S. Army Staff, and the Training and Doctrine Command are all currently developing and evaluating scenarios, models, and simulations that provide tools to educate and assist future analysts, planners, and decision-makers in addressing complexity within future diplomatic and military operations. Commercially developed simulations have been brought to bear for near-term solutions but most of these tools are stochastic and/or deterministic in nature and are not completely able to account for cognitive complex adaptive systems where rational or irrational thoughts, ideas, and actions abound and relationships are constantly changing and morphing.

## Protean Media: Examining Complex Adaptive Systems

In 2003, the Proteus Consortium sponsored the development of an educational role-playing environment (RPE) that incorporated the use of the PI, allowing participants and players to examine the results of human interaction and subsequent reactions, convergence and divergence, conflict and agreement. Entity role-players had the ability within the context of a strategic or operational event or series (contemporary Iraq) to establish goals and develop their own

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[4]The five planes of influence are similar to the information age warfare domains. These are places where actors act upon or influence others either directly or indirectly. They are Terrestrial, Space, Spectral, Virtual and Psychological. See Pamela H. Krause, comp., Michael S. Loescher, Chris Schroeder and Charles W. Thomas, *Proteus Insights from 2020* (The Copernicus Institute Press, 2000) 18-25

strategies that could be revealed or hidden to achieve these goals. Each strategy then could be implemented in adjustable real time (Figure 3).

The Protean Media RPE or "Critical Thinking Game" was developed by Professor John Hiles at the Naval Postgraduate School's (NPS) Modeling, Virtual Environment and Simulation (MOVES) Institute.[5] Protean Media is a "light" and low cost RPE, designed to model complex adaptive systems and naturally evolving events. In the Game participants face ambiguous complexity manifested by others' goals, strategy and intent. Professor Hiles' goal was "reification" or turning abstract concepts into tangible objects to handle and manipulate. This Game is a systems approach to human conflict. The Game incorporates tables of mental models/behaviors and



**Figure 3: Eight Entity Control Panel**

shows the interaction of these models through a composite, connecting moving generation system. Also, the speed at which interactions (virtual and cognitive) occur has been radically increased by info technologies within the game.

Protean Media demonstrates complexity by taking tacit entity knowledge, harnessing it and letting it manifest itself as tumbling reality. Inputs and direct or indirect actions will often not produce anticipated or expected results; nor will the outcomes be readily mapped into a pattern, or even consistently repeated based on the volatile, continually changing and temporal nature of human relationships and interactions among entities and populations. The game is oriented around thought, interplay and reality. The play is paradoxical in nature and can render valuable insights.

The game environment—essentially entities/groups/factions and their attributes—are "wrappers" and can be changed depending on the groups or regional areas where conflict or significant events are played out (Disaster relief, humanitarian assistance, regional peacekeeping, stability & reconstruction, civil war, etc). Currently configured, it replicates the factions/groups within Iraq and is modeled accordingly. The key objective of the game is to find where factions and entities, ideas and actions converge and either conflict or agree.

Another objective is to directly expose participants to intended/unintended consequences generated by the direct or indirect actions and decisions of the various entities. The information is captured in the system by adding rigor to the background data, incorporating a thorough AAR process, and collecting outputs. These inferences can be turned into lessons learned supported by the game data.

The software is government owned, easy to use, and currently resides at the NPS and with the Proteus Management Group (PMG)[6] at the Center for Strategic Leadership, U.S. Army War College. It is Microsoft based and has limited graphics, making it portable and usable on almost any government computer. Actual hardware system requirements are minimal for client and server systems. The Game can run on laptops or desktops. The server can handle up to 25 clients (entities) as currently configured. As Game software and data are enhanced or additional clients are added, systems will require additional memory and processing speeds. The network configuration is also relatively simple and versatile and can be run on a non-secure or secure LAN or wireless network. Given sufficient resources, it coulds also be web-based.

## Protean Media's Future Potential

The Game's basic backbone architecture has great growth potential. To optimize play, and educational benefit, the Game needs to be reconfigurable and upgradeable in order to model additional scenarios, entities and multiple planes of complexity. Even though the current Iraq "wrapper" models only eight entities: U.S. Coalition, Iraqi Government, Nongovernmental Organizations, Sadr Shi'a, traditional Shi'a, Sunnis, and a general category of "insurgents," 25

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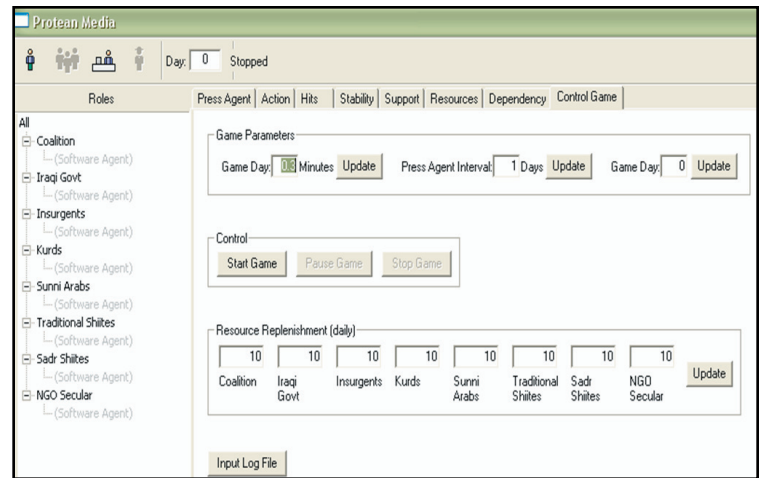
[5] For information see MOVES home page at: http://www.nps.navy.mil/moves/

[6] The PMG, established in mid-December, is a resident project at the Center for Strategic Leadership. The project is sponsored by the Office of the Director, National Intelligence to promote furhter discourse, study and research on the application of Proteus Insights to strategic issues, focusing on the refinement, continued development and use of the Proteus lenses in future scenarios. Its second objective is to assist strategic and high-operational level decision-makers, planners and intelligence analysts in creative consideration and critical analysis of future national security, military and intelligence issues. The Group's focus areas are Educational Exercises, Experiential Learning, Analysis and Decision Support Future Research and Publication. For additonal information, see the Proteus Management Group home page http://www.carlisle.army.mil/proteus.htm

entities or actors (and possibly more) can be added at minimal cost with only minor design modifications.

To better educate the players prior to game execution, they should be provided background data that replicates real world information, to include country background, regional studies, and specifics on state and non-state actors' intent, goals and strategies. Information on any active international and nongovernmental organizations, describing their characteristics, capabilities, and attributes, would also be desirable. Additionally, the game's overall execution methodology (administration, moderation, data collection, After Action Reviews, etc.) should be designed not only to look at cognitive interaction and convergence but to better understand the results of unintended/intended outcomes and/or second and third order effects.

The Protean Media Game, although currently configured as an educational tool to reinforce student experiential learning, has the potential to be redesigned as a decision support tool (using expert agents for planning, rehearsal, or generating outcome models) if used in consonance with other cognitive assistants and learning agents (e.g. Disciple).[7] If used in this venue, the tool should gather input from strategic or operational field experts, analysts, and regional planners in order to validate outcomes. These outcomes or insights should be based on decisions and actions of experts, using the many attributes particular to designated actors, groups or entities. The latter configuration will take significant effort and major work to do adequately; however, it is feasible with additional time and funding. Although the Game has a "closed" versus an "open" architecture, it is relatively easy to develop a series of different "wrappers" that can be applied to most real world or future scenarios using the basic architecture currently on hand. Also, the NPS MOVES Institute is examining the use of robots/smart agents to play Game entities in future versions.

## Summary

The Protean Media is not a total panacea for gaming or modeling complexity; however, it establishes the foundation for others to build upon. The PMG's ultimate goal is to develop a "scalable variable wrapper, agent based interactive" experiential education, planning, and implementation game or tool that identifies cascading second and third order effects and unintended consequences in complex environments by incorporating the complex, temporal, and changing effects of human-behavior/belief systems and socio-cultural dimensions across the "planes of influence." To do this we must continue to integrate advances of R&D from gaming theory, human factors analysis, influence, perception, and cognitive modeling, and other complex-nonlinear programming efforts to create the ultimate "paradoxal" game.

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[7] For more information on Disciple, see the George Mason University Learning Agents Center: http://lalab.gmu.edu/

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This and other CSL Issue Papers may be found on the USAWC/CSL web site at http://www.carlisle.army.mil/usacsl/IPapers.asp.

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